STAT

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15 July 1965

STAT

Progress Reports - June 1965
Projects 552 and 552A

Gentlemen,

Enclosed are three (3) copies of Progress STATINTL
Report on Projects 552 and 552A for the period June 1965.

Very truly yours,

STAT

Vice President - Marketing

RJL/de

Enc: (3) P.R.

PROGRESS REPORT
For
VERSATILE, HIGH PRECISION STEREO POINT TRANSFER DEVICE

Period Covered:	June 1965
Dated:	14 July 1965
Job No.:	#552 and #552A
Document No.:	OD-255

PROGRESS REPORT
For
VERSATILE, HIGH PRECISION STEREO
POINT TRANSFER DEVICE

Alignment, test and debugging of the optics and scanning drive have been done on a companion Stereo Viewer this month.

OBJECTIVE ASSEMBLY

Alignment check and corrections were made on right hand channel, much like the left channel had last month.

The adjustable objective lens mounts have been modified with a positioning aid so that critical centering can be made without too much vibration or force.

Antivignetting filters have not been received yet, but are expected in July.

EYEPIECE ASSEMBLY

The mirror adjustment stability has been the area of concern here. The eyestation mirror carriages, telescope mirror mounts, penta mirror indexing means and the fixed mirrors received close scrutinizationas sources of variable and inaccurate alignment.

The ball bushings in the eyestation carriages were preloaded directly on their guides so as to make mirror carriage set up dependent on guiding way straightness, and to remove forces between the ways. The previous preloading method that appeared to vary with way alignment and dirt conditions proved unsatisfactory. Also, the over the center detent means that applied a force to the eyestation mirror carriages at the ends of their travel, was removed to eliminate a torque in the azimuth plane. Travel of the carriages is now limited by cushioned extremes of knob crankshaft travel.

The telescopes that the eyelenses are a part of had a revision in their alignment scheme and a mirror mounting. As the interpupillary adjustment was made, the image and dot reticle showed a large change in location. A more precise method of centering the field stop on the axis of rotation of each of these assemblies, together with a more rigid method of mounting an adjustable mirror near the telescope objective, helped to reduce image shift in this mechanism.

The penta mirrors that serve the reversion means were examined for possible errors with time and use. Since the reversion mode is accomplished by a single mirror rotated into place, small rotational positioning errors will be magnified by the eyepiece telescope. We find that repeat accuracy is less than 1 arc minute at the mirror, but that very rapid indexing will disturb detent setting. As with other controls that manipulate the optical elements in eyepiece and objective assemblies, care must be taken when settings are made.

SCANNING DRIVE

Some irregularities in scanning drive velocity have been noticed with dirt or surface irregularities on lead screws as being suspect. Although screws have been thoroughly cleaned and other components of drive carefully inspected, dirt lodged in ball recirculating path is a possibility causing momentary load increase and would require factory disassembly and cleaning. Hesitation in movement is caused by small changes in drive load reflected to damper where its torsional resilience is wound up until enough torque is seen to overcome load requirements. Stiffening springs are a possibility for reducing damper's torsional deflection, but will make damper less effective in smoothing impulses from stepping motor. Increasing load enertia at the ball screws to store energy for the periods of resistance is now being tried, although too much enertia seen by motor will cause it to have a poor rapid starting characteristic. As test work progresses, a balance of these properties will be attempted.

Work for the Next Reporting Period

1. Complete scanning drive, mechanical and electric modifications.
2. Study and search for various optical and manufacturing techniques that may minimize groove visibility of vacuum film holddown platen.
3. Design, fabricate and install ruggedized vacuum manifold and plumbing changes.
4. Complete optical debugging.
5. Complete system debugging.

ATTACHMENTS:

1. Financial Report